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to the same group and in this sense may be said to be in the same chromosome pair is evident. Until a bent eyeless fly—a cross over—is obtained, the amount of crossing over between these two characters in the fourth chromosome can not be directly determined.

MILDRED A. HOGE

AN ABNORMAL HEN'S EGG

IN a frequently quoted paper, Parker ('06) has classified double eggs on the basis of the factors supposedly concerned in their formation. Considering the ovarian and oviducal factors as independent, Parker says:

> As a result of these two factors, three classes of double eggs can be distinguished; first, those whose yolks have come from an abnormal ovary but have passed through a normal oviduct; secondly, those whose yolks have come from a normal ovary but have passed through an abnormal oviduct; and finally those produced by an ovary and oviduct both of which have been abnormal in their action.

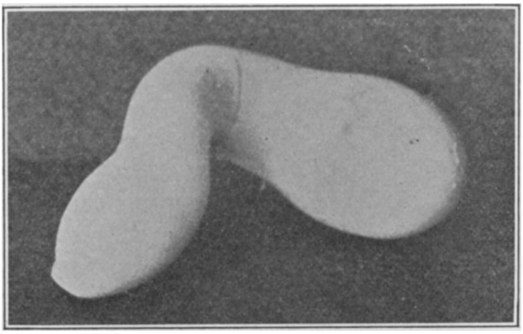

FIG. 1. PHOTOGRAPH OF THE SPECIMEN × 1.

Cases of ovum in ovo have been attributed by Parker and others to antiperistalsis. Patterson ('11) mentions a case of an inclosed double egg in which there were two distinct peristaltic actions. Féré ('98) has called attention to the fact that hens frequently lay several double eggs in succession. Féré claims that he succeeded in producing double eggs in a hen which normally laid single eggs, by drugging her with atropine sulphate. Glaser ('13) has described the ovary of a hen which habitually laid double eggs and concludes that fusion of the follicles is the explanation of some double eggs.

The case which I wish to record is very similar to that figured by Hargitt ('12) and termed by him a "gourd-shaped" egg. Unfortunately, the egg which Professor Hargitt studied was not preserved carefully and on account of evaporation, the condition was such that he could not be certain of the presence of yolk in the smaller end. He assumed that the egg was comprised of about normal parts in the larger end, and that the smaller consisted of only albumen, "its yellowish tint having resulted from the evaporating process which had taken place."

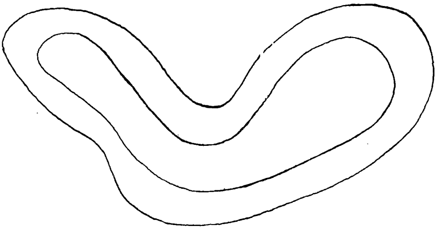

FIG. 2. DIAGRAMMATIC MESIAL VIEW OF THE ABNORMAL EGG, SHOWING THE RELATION OF THE YOLK TO THE ALBUMEN.

The egg shown (Fig. 1) was presented to Professor Julius Nelson, of Rutgers College, several years ago and was carefully preserved in a jar of alcohol. The result was that although the action of the alcohol had partially decolorized the yolk, it was possible to trace it throughout the entire extent with no difficulty. As can be readily seen from the photograph, that part of the egg which might be termed the "neck" presented a much roughened appearance from the excessive accretion of lime. A nodule of lime at the smaller end of the shell would seem to indicate that the last deposit of the shell glands was there received.

For convenience in examination of the irregular shaped egg, it was separated at the circling line seen in Fig. 1, and then the two parts were halved with a sharp scalpel, after the penetration of the shell by means of scissors.

When the first separation was made at the line indicated, one could readily discern the presence of a *constricted* yolk surrounded by apparently normal albumen. Examination of the halved portions showed that the yolk extended from the larger end through the constricted region to occupy a position approximately normal in the smaller end. It seems possible that this particular abnormality may have been caused by a constricted oviduct rather than from the fusion of two eggs during apposition, induced by anti-peristalsis.[1]

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[1] Since the above was written, but before the proof came to hand, an authoritative paper has been published (Maynie R. Curtis, Studies on the Physiology of Reproduction in the Domestic Fowl, Vi. Double- and Triple-Yolked Eggs. Biol. Bull. Vol. 26, pp. 55–83.) in which no mention has been made of the possibility of incomplete separation of both yolk and albumen of a single egg. Evidence of such separation is not wanting in other vertebrates, however scant it may be in the fowl.